NVAP Reference Guide: Brucellosis (Control and Eradication)

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Brucellosis is a contagious, infectious, and communicable disease, primarily affecting cattle, bison, and swine, and is caused by bacteria of the genus *Brucella. Brucella abortus (B. abortus)* primarily affects bovine species; however, goats, sheep, and horses are also susceptible. *B. suis* primarily affects porcine species; and a third strain, *B. melitensis*, primarily affects goats and sheep. A fourth strain, *B. ovis* , which primarily affects sheep, exists in the United States but it does not cause significant disease problems. Currently, there is no program or initiative to establish a program for the control of *B. ovis* or *B. melitensis*.

In its principal animal hosts, brucellosis causes loss of young through spontaneous abortion or birth of weak offspring, reduced milk production, and infertility. It can affect both animals and humans. Brucellosis is transmitted from animals by direct contact with infected blood, placentas, fetuses, or uterine secretions, or through the consumption of infected and raw animal products (especially milk and milk products). There is no economically feasible treatment for brucellosis in livestock.

The regulations of the APHIS Brucellosis Eradication Program vary based on the brucellosis status of each State. Minimum standards are set forth in the Brucellosis Eradication Uniform Methods and Rules (226.42 KB), a publication distributed by VS; however, some States have more restrictive requirements. Check with the

appropriate APHIS Veterinary Services (VS) Area Offices for testing and vaccination policies. Contact the State or Federal animal health officials in your State to obtain all necessary forms, mailers, identification tags, and other items required for both vaccinating and testing eligible animals. (Fees may apply.)

Interstate Shipment

Before testing for interstate shipment, obtain State-specific regulations by contacting the State animal health official's office in the importing State.

International Export

When preparing to test and certify an animal for international export, follow the requirements found in the National Center for Import and Export, Animal Regulations Library and then contact the APHIS VS Area Offices for additional guidance.

VS Form 4-33

VS Form 4–33, Brucellosis Test Record (617.27 KB) (and, if applicable, a VS Form 4-33A, Continuation Sheet (416.73 KB)) must be completed for each animal or herd tested. (A separate VS Form 4-33 must also be completed for each *species* tested). (See Appendix D for an example of this form and instructions for completing it). The VS Form 4-33 requires that a reason be provided for conducting the test. Reasons may include export (specify the test required by the importing country), interstate movement (depends on the destination State), sale (including local change of ownership in many States), show or fair, diagnostic assessment (such as abortion), and owner request. If infection is suspected or confirmed, regulatory officials will contact you, the owner, or both, to develop a herd plan.

VS Form 4-54

VS Form 4-54, Brucellosis Test Record - Market Cattle Testing Program (439.46 KB), is used for brucellosis tests conducted as part of the Market Cattle Testing Program. This program governs the testing of cattle and bison at markets (first point of concentration) or slaughter. (See Appendix D (2.02 MB) for an example of this form and instructions for completing it.)

Testing

Bovine— A complete herd blood test must include all cattle or bison six months of age and older, except steers and spayed heifers, unless otherwise specified by a Designated Epidemiologist.

Swine—A complete herd test must include all breeding swine more than six months of age unless they are being fed for slaughter and are not in contact with breeding swine. Vietnamese potbellied pigs are considered domestic swine for the purposes of disease control and eradication procedures and, as such, fall under the same regulations in Title 9 of the CFR. All tested swine must be identified with an official eartag, tattoo, or other official identification. (Also see the APHIS Animal Disease Traceability guidance "Official Eartags: General Criteria and Options (931.77 KB).")

Exotic Species—When dealing with exotic or non-domestic species, contact your State animal health official or the appropriate APHIS VS Area Offices.

Blood Collection and Submission

Identify each animal with either an official USDA metal eartag (placed in the upper middle portion of the right ear), an official USDA RFID eartag (placed in the middle of the left ear), an individual animal's breed registration tattoo or brand, or an individual registration number (in conjunction with an official eartag, or breed registration tattoo or brand) issued by a breed association recognized by VS. (Also see the APHIS Animal Disease Traceability guidance "Official Eartags: General Criteria and Options (931.77 KB).") Record the information from the identification or vaccination eartag, the registration tattoo, and the age (months or years), sex, and breed for each animal on VS Form 4-33.

Take proper precautions by wearing protective gloves and eyewear when in contact with animals being tested. Avoid direct contact with any retained placenta, vaginal discharges, aborted fetuses, and other reproductive tissues, as these materials are potential sources of transmission of brucellosis.

Note: If the animal has an approved official identification tag (e.g., NUES, RFID, etc.) in place, record the information from that eartag on the VS Form 4-33, and do not place a new official USDA metal or RFID eartag in the ear.

Collect 3 to 5 mL of blood. Take appropriate precautions to prevent hemolysis by (1) sending the samples with ice packs or (2) centrifuging the blood and sending the serum only. (See " Laboratory Submissions.") Because swine blood is particularly susceptible to hemolysis, take extra precautions in handling it. If bleeding the animal with a needle and syringe, do not extrude the sampled blood from the syringe through the needle into the test tube. This practice can cause hemolysis. Blood or serum samples should be delivered to the appropriate cooperative State or Federal laboratory as soon as possible for testing. Test results will be interpreted by State or Federal regulatory officials. You may be contacted for additional individual animal or herd history.

Animals Eligible for Vaccination

Heifer calves should be vaccinated between four and 12 months of age; however, many States have more restrictive age requirements for vaccination. Before vaccinating any animals for brucellosis, be certain that you understand and follow the applicable State's requirements. Adult vaccination for brucellosis may only be conducted by State and/or Federal officials. If you have questions concerning this program, contact the appropriate State animal health official or APHIS VS Area Offices.

Instructions for Vaccination

Step 1: Vaccine Handling and Administration

1. Keep the vaccine stored properly according to label instructions.
2. Check the expiration date before using.
3. Reconstitute the vaccine following the label instructions.
4. Mix the RB51 vaccine just before using; keep it cool and out of direct sunlight.
5. **Use caution.** RB51 may cause clinical brucellosis in humans if accidentally injected, sprayed in the eyes, or allowed prolonged contact with the skin. *If you are exposed, contact a physician as soon as possible.*
6. After reconstitution, the vaccine loses potency rapidly. Do not reconstitute more vaccine than will be used in one hour; if working in warm temperatures, keep the vial on an ice pack to maintain viability.

7. To avoid contamination and accidental vaccine exposure to other animals, maintain separate syringes and needles for brucellosis.
8. Administer 2 mL of the vaccine subcutaneously.

Step 2: Tattooing

1. Clean the inside of the right ear to enhance ink penetration. Green ink works best for legibility, especially in black-pigmented ears.
2. Tattoo the ear with the appropriate coding between cartilage ribs in the middle of the ear. Allow for normal growth of the ear. If ear marks or notches do not permit this location, try to place the tattoo as near as possible to the recommended position.
3. Apply the ink with a dauber and thoroughly rub the ink into the tattoo holes.
    - Vaccination tattoos must be applied to the right ear. For *B. abortus* Strain RB51 vaccinates, the tattoo will include the letter "R" for RB51, the U.S. Registered shield and "V," and the last digit of the year in which the vaccination was conducted. Documentation of brucellosis vaccination tattoo information on the VS Form 4-33 (617.27 KB) (along with the VS Form 4-33A, Continuation Sheet (416.73 KB), if applicable) and VS Form 4-54 (41.98 KB) is essential for accurate test interpretation.
    - Below is an example of the tattoo that would be applied in the right ear of a female calf that was brucellosis vaccinated in a year ending in the number "2". The first character is an "R", indicating vaccination with RB51. The middle character is the Official Brucellosis Shield. The third character represents the last number of the year that the calf was vaccinated. (In this example, the calf was vaccinated in either 2002 or 2012.) Please contact your State animal health official if you are interested in obtaining the Brucellosis Shield digit for your vaccination pliers.

Example of an RB51 vaccination tattoo applied in the right ear (191.57 KB)

Step 3: Records

1. Record the information (eartag, age in months, breed, sex, and whether purebred or grade) on VS Form 4–26, Brucellosis Vaccination Record (412.66 KB). (See Appendix D (2.02 MB) for examples and instructions for completing these forms.)

2. Use only official USDA orange metal vaccination tags and official USDA tattoos placed in the right ear. Individual animal registered breed association registration brands or tattoos may be substituted for official eartags. Official USDA RFID eartags, placed in the left ear to avoid interference with the official vaccination tattoo, may be substituted for the official USDA orange metal vaccination tags.
3. Promptly submit the vaccination records to your State program records office as instructed by your State animal health official. Many States require that records be submitted within seven days of vaccination; check with your State for specific guidelines. *Note: Animals are not considered to be official vaccinates until the State animal health official or APHIS VS District Office has recorded the certificate information. Timely submission of certificates is essential.*
4. On rare occasions, it may be necessary to recertify a vaccination for an animal that has no tag or an illegible tattoo. Contact your State animal health official or APHIS VS Area Offices for permission and specific instructions.

Working with Infected Herds

The details of eradicating brucellosis from herds known to be infected are beyond the scope of this guidance. Your State animal health official, the APHIS VS Area Offices for your State, and your local regulatory veterinarian will work with you and your client to develop a herd plan.

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